THE HERRING.

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First Article.

Of all the branches of study into which natural history has been divided, the most interesting, from its extensiveness, its variety, and the almost insurmountable difficulties which it presents to the student, is Ichthyology. To acquire a thorough knowledge of zoology requires much labour, study, travel, and considerable risk; in like manner with ornithology, in the prosecution of which the difficulties are greater, from the mixture of elements; but still the inhabitants of the air have thus much in common with us, that they live in the same atmospheric medium, derive their sustenance from the same earth, and although the difficulties of following their motions, and observing (unseen by them) their habits and natures, are considerable, yet still, thanks to the extension of science, they have not proved unconquerable, and the telescope, in that form called the ornithoscope, has enabled man to acquire a large store of information on this interesting subject. But with ichthyology how widely different! Here the preliminary obstacle which presents itself is an element fatal to the existence of man within it, and out of which the creatures with whose nature he would fain be acquainted cannot exist. His very powers of observation are thus rendered useless, except in a very limited degree. They are bounded by a glass vase, or a small clear pond at the utmost, and confined to a few specimens of the smaller fishes, and even then it is doubtful whether circumstances may not have altered their really natural habits. Yet above these obstacles the mind of man has risen, and by the union of analogy with laborious and constant observation, he has succeeded in classing a large amount of the tenants of the mighty deep. But before he can ascertain what proportion, or write the history of any one of them fully, he must discover some substitute for gills which will enable him to extract the necessary air for his existence from the water, and thus enable him to search the depths of ocean, and seek its inhabitants in their haunts. That such may yet be discovered by the ingenuity of man, let no one deem impossible.

Amongst the fishes hitherto discovered and classed, the herring *(Clupea harengus)* is one of the most universally known, most generally useful, and one of the greatest boons of an all-bounteous Providence to the inhabitants of these countries. Abundance, the universal producer of contempt, has caused this beautiful creature to be despised; but to the naturalist's eye few creatures are possessed of greater charms. When first taken out of the water, it is of a dark-bluish and green colour on the back, lightening down the sides to a silvery blue, which shades to white on the belly. The scales have a clear lustrous golden colour, which changes in various shades of light after the manner of mother-of-pearl; they lie over one another in regular lines, with the convex edges pointing towards the tail. The termination of the body is remarkable for the beautiful dark-green colour which it exhibits when held before the light. The fins are seven in number—one dorsal, of eighteen or nineteen rays; two ventral, of nine rays each; one anal, of seventeen rays; two pectoral, of eighteen or nineteen rays each; and the caudal, or tail fin, of eighteen or nineteen rays. The eyes are placed in the middle of the sides of the head; the iris is of a silvery white colour, and the pupil black. The spine consists of fifty-six vertebræ. The ribs are thirty-five or six in number on each side, and there are several minute bones below the ribs, which terminate in soft elastic muscles at the anal fin, and serve to give it strength and elasticity. Fifty-two bones compose the head. The bronchiæ or gills are four on each side, each gill being supported by an arched cartilage; and there are two imperfect gills without the arch, which join the gill lid, and appear to regulate its motions. The convex side of the gills is furnished with fringed fleshy fibres, of a strong red colour when the fish is healthy; the concave side, which is next the mouth, is furnished with long serrated spines. The heart is placed in a cavity near the gills, above the stomach; it is three sided, and consists of a single auricle and ventricle. The œsophagus, or gullet, is remarkably short in proportion to the size of the fish; the stomach is thin, membranous, and capable of great distension. The gut is of uniform size throughout. The gall bladder is small, and of a dark-green colour; the liquid is of a light claret hue, having a sweetish pungent taste. The air bag, or *vesica natatoria*, is of a silvery white colour, round, of nearly the length of the stomach, and pointed and narrow at both ends; it is connected with the funnel-shaped posterior part of the stomach by a duct. The use of the *vesica natatoria*, or, as it is commonly called, the *swim*, is to enable the fish, by inflating or expelling the air from it, to rise or sink, for if the air-bag of a living fish be pierced, the creature sinks at once to the bottom. The under jaw of the herring projects beyond the upper. The form and consistency of its nose proves its use for the purpose of feeling, in the absence of the cirri or feelers possessed by other fishes. The skin not being provided with the *corpns papillæ*, and being besides covered with scales, it is supposed that the sensation of touch is either very limited or wholly wanting. The herring is provided with two nostrils; and from the perfection of the olfactory organ, it is presumed that its sense of smell is very acute. It has no external organs of hearing but a fringed orifice below the eye on the inner side of that part of the head which covers the gills. Fishermen affirm that their sense of hearing is very acute, and state instances of their immediately ceasing the peculiar pattering noise which they are accustomed to make on calm evenings, if a loud sound is made on any part of the interior of the boat.

The Swedes attribute the departure of the herrings from the neighbourhood of Gothenburg to the frequent firing of the British ships of war which were stationed there for convoys; and so great is the influence which fishermen have been accustomed to attribute to sound, that we are told in Chambers's Picture of Scotland that the bell of St Monance in Fife, which was suspended from a tree in the churchyard, was removed every year during the herring season, lest the noise should scare the fish from the coast.

The mouth of the herring is furnished with a few teeth in the upper and lower jaws, and four rows in the tongue. These pointing inwards, enable it the more readily to secure and swallow its slippery prey, which chiefly consists of extremely minute animals, such as small medusæ, the *Oniscus marinus*, and small cancri and animalcula. The herrings on the coast of Norway sometimes feed upon a small red worm called the Roé-aal, which renders them unfit for curing; but there is probably no fish so indiscriminate in its food. The herring is often caught with flies, at which it leaps readily, and frequently with naked unbaited hooks. Mr Mitchell, in his article on the herring in the Quarterly Journal of Agriculture, mentions that in the stomachs of several herrings which he examined, he found numbers of young sand-eels, and he adds a very curious observation, namely, that in the stomachs of such herrings as had the milt or roe small and immature, the sand-eels were numerous; whereas in those which had the milt or roe full grown, there were none whatsoever; but he offers no suggestion to account for this remarkable circumstance. They also frequently feed on their own ova and young.

The herring propels itself through the water by rapidly moving the tail from side to side, the other fins being employed in steadying and probably aiding its movement, and it is this rapid waving of the tail which causes the rippling or pattering sound which announces the presence of a shoal when swimming near the surface. On a calm night their course may be traced by a brilliant phosphorescent light, which illuminates the surface of the water, and is emitted partly from the fish themselves, and partly from the minute marine animals with which the ocean swarms.

Sometimes herrings do not approach the surface, and fine healthy shoals are often apt to swim deep; hence fishermen, through their ignorance in trusting too much to appearances, are frequently misled, they being apt to suppose that when they see no gulls or large fishes of prey exhibiting their gluttonous gambols, there are no herrings present, whilst the finest and choicest may be at the moment in millions beneath them; in fact, those which swim near the surface are usually the young, the gorged, and the sickly. Mr Mitchell informs us that several experienced masters of Dutch herring busses assured him that the only appearances they ever sought for were the colour of the sea, which should be a dark green, and its consistence apparently muddy. There is an additional fact worthy of observation, which is, that in clear dry weather the fish keep down at the bottom, and do not ascend until the moon rises.

The migration of the herring has been long a disputed point, and from the difficulties to which we have alluded in the commencement of this article, of observing minutely or accurately the movements or nature of fishes, it is likely to remain unsettled much longer. The old and long received opinion has been, that the winter habitation of the herring is under the vast fields of ice which surround the North Pole

within the Arctic Circle; that they there deposit their spawn and advance southwards with the opening year, making their appearance off the Zetland islands about the month of April, and coming upon the coasts of Ireland and Scotland in June. Off Thurso they are sometimes taken as early as May, but June, July, and August, are the months in which the fishing is most actively commenced off the west Highlands of Scotland. Off the east coast of Ireland, near Arklow, the fishery used to commence in June, but latterly it has been postponed till October. The fluctuations in the time of commencing the herring fishery at various places, and the fact of a winter fishery being successfully carried on in some parts—as for instance at Killybegs, where they are taken from December till March, and along the whole coast of Ireland south of Galway Bay, where there are sufficient indications that the fishery might be successfully carried on the whole year—have at length caused the hitherto received opinion of their migration from the Arctic Circle to be questioned, and Mr Mitchell has given many sound arguments in refutation of it. He divides the theories upon the subject into three:—first, that the herrings come from the North Pole in great shoals of many leagues in extent, dividing into lesser shoals on coming towards the north point of Scotland; second, that they do not come from the Arctic regions, but from a less northerly direction, still, however, very far north of Shetland; and, third, that they are spawned on the coasts near which they are caught, and are consequently natives; that after spawning, they retire out to sea, and continue so until their spawning season comes round again, when they return to their accustomed shore. The latter he considers to be the most reasonable theory, and adduces in support of it the well-known fact that the herrings at every fishing station are of a peculiar quality uniformly the same, and always different from those at other even very nearly adjoining stations; and so well has this fact been established, that practical men can at once pronounce from the size, appearance, and quality of the fish, where it was taken. For example, the herrings taken off the coast of Stadtland in Norway are almost twice the size of those taken near Shetland, and these are twice the size of those caught near Thurso, whilst the Dublin Bay herrings have long been famous for their superior flavour, which is unmatched by those of any other bay or harbour. Again, a size of herrings similar to those of Yarmouth visited till lately the coast of Lumfiord in Denmark, whilst on the Mecklenburg coast higher up the Baltic, the herrings are one-third larger than those of Lumfiord; and proceeding up the Baltic above Mecklenburg to the Pomeranian and part of the Prussian coasts, they are fully one-third *smaller*; and again still farther up they are larger. In quality and condition they differ as much as in size, those off the coast of Holland being so inferior as not to be worth pickling, and the Dutch fishermen consequently seek the coasts of Scotland and England.

As to the time of appearance at the several fishing stations, their irregularity goes far to prove their constant propinquity, the take commencing at some of the more southern stations before the northern ones; whereas, if they migrated regularly from the north, it is evident that the fishing should commence at the various stations in regular order, from the most northern where the shoals would first make their appearance, to the next, and so on to the most southward, which should be deserted by them at some certain season, in order that they might return.

But there is no well-authenticated instance of those prodigious shoals of herrings having been met with approaching the south in any high northern latitude; and so far from their abounding in the Arctic regions, none have been found in the Greenland seas, nor have any been discovered in the stomachs of the whales killed there. Egede, who resided in Greenland for fifteen years, and compiled the natural history of it, after enumerating the fishes, adds, "No herrings are to be seen;" whilst on the contrary, the whales which feed principally on herrings, frequent our own coasts. These arguments appear to be fatal to the theory of the Arctic migration, and to support most powerfully that of the mere retirement of the herring to the deep. But Mr Mitchell goes farther, and asserts, upon the evidence of the celebrated naturalists Bloch and Lacepede, that "fishes of a similar size even in fresh water cannot go above half a mile a-day, and that therefore herrings could not make, even from spring to autumn, the long voyage attributed to them." Now, this appears to be going too far, and we would prefer that the argument should rest on the former grounds, excluding this, which seems to be a weak assertion, founded upon the observation that fishes do not proceed far from their haunts, whilst the fact is, that they merely move about in search of food; but who that has seen the rapid movement of a trout, or of the very fish we are treating of, could for a moment entertain the idea of their progress being confined to a rate that the crawling snail might equal? Mr Mitchell himself mentions a fact that alone is sufficient to rebut such an assertion, namely, that shortly after the union between England and Scotland, an immense shoal of herrings ran ashore near Cromarty, and covered the beach to the depth of several feet; and he adds, "Strange to say, however, the shoal left the Frith in a single night, and no shoals made their appearance again for more than half a century."

Now, if they could make but half a mile a-day, how could they have returned several miles in a single night? But this argument was unnecessary, and it would be well for many persons to know that an ill-sustained argument is not merely a bad prop to a cause, but a wedge inserted for the advantage of an adversary, placed ready for his use in overturning it.

But the most powerful argument against the theory of migration seems to have escaped Mr Mitchell's observation; it is—that the herrings do not retire to spawn, as was asserted, but actually spawn near the fishing stations, and retire after it. Their spawn is taken up in abundance, and the nets are always found to contain large quantities of it, whilst the assertion that no young herrings are found near our shores, is altogether absurd, the contrary being the fact. The fecundated roe has the power, after having been deposited, of attaching itself firmly to the stones, rocks, or sea-weed, and in about three weeks after deposition, the young fry come forth from the eggs, and are seen in millions near the shore; in six or seven weeks they are about three inches in length, and arrive at maturity in about eighteen months.

Lacepede tells that in North America the inhabitants carry the herring-spawn from the spawning ground to the mouths of rivers and other places not before frequented by the fish, and those places become forthwith regular resorts for them; and the same authority mentions the fact of a similar custom in Sweden.

Thus the theory of the herring being a native of the place which it is accustomed to frequent annually, seems to be satisfactorily established; and having thus presented our readers with such information upon the subject of the natural history of the herring as our space permits, we shall close this article, reserving some account of the various modes of fishing and methods of curing, for another paper. N.

SENTIMENT.—How much fine sentiment there is wasted in our strange world! I have seen a young lady in raptures of admiration over a flower which was to deck her hair in the ball-room, who would turn away with a look of loathing from the proffered kiss of her baby brother; and I have heard lovely lips, all wreathed in smiles, and breathing tones of joy over a pretty shell, a shining insect, or even a gay ribbon, say cold and cruel words to the best friend, ay, the *mother*, who was wearing her life out to promote the happiness of her ungrateful daughter.

MARRIAGE.—When a man of sense comes to marry, it is a companion whom he wants, and not an artist. It is not merely a creature who can paint, play, dress, and dance—it is a being who can comfort and console him.

BLUSHING.—Blushing in the male sex is too frequently and constantly regarded as a proof of guiltiness: it is a proof of sensibility and fear of disrepute, by whatever incident called forth; but except in so far as fear of being thought guilty is proof, it affords no proof of the existence of the object by the idea of which the apprehension is excited.—*Bentham.*

Pride destroys all symmetry and grace, and affectation is a more terrible enemy to fine faces than the small pox.—*Hughes.*

At twenty years of age the will reigns, at thirty the wit, at forty the judgment.—*Grattan.*

Authors in France seldom speak ill of each other, unless they have a personal pique. Authors in England seldom speak well of each other, unless they have a personal friendship.—*Pope.*

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